Public Notice

U S Army Corps of Engineers
Huntington District

In reply refer to Public Notice No.	Issuance Date:
LRH-2008-00293-OHR	May 16, 2008
Stream:	**Closing Date:**
Ohio River MP 161.7	**June 16, 2008**

Please address all comments and inquiries to:
U.S. Army Corps of Engineers, Huntington District
ATTN: CELRH-OR-F Public Notice No. (*reference above*)
502 Eighth Street
Huntington, West Virginia 25701-2070 Phone: (304) 399-5210

PUBLIC NOTICE: The purpose of this public notice is to inform you of a proposal for work in which you might be interested. It is also to solicit your comments and information to better enable us to make a reasonable decision on factors affecting the public interest. We hope you will participate in this process.

REGULATORY PROGRAM: Since its early history, the U.S. Army Corps of Engineers (Corps) has played an important role in the development of the nation's water resources. Originally, this involved construction of harbor fortifications and coastal defenses. Later duties included the improvement of waterways to provide avenues of commerce. An important part of our mission today is the protection of the nation's waterways through the administration of the Corps Regulatory Program.

SECTION 10: The Corps is directed by Congress under Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403) to regulate all work or structures in or affecting the course, condition or capacity of navigable waters of the United States (U.S.). The intent of this law is to protect the navigable capacity of waters important to interstate commerce.

SECTION 404: The Corps is directed by Congress under Section 404 of the Clean Water Act (33 USC 1344) to regulate the discharge of dredged and fill material into all waters of the United States, including wetlands. The intent of the law is to protect the nation's waters from the indiscriminate discharge of material capable of causing pollution and to restore and maintain their chemical, physical and biological integrity.

TO WHOM IT MAY CONCERN: The following application has been submitted for a Department of the Army Permit under the provisions of Section 404 of the Clean Water Act. The purpose of this Public Notice is to:

1. solicit comments on the proposed impacts to waters of the United States; and
2. solicit comments on proposed adverse effects to historic properties resulting from implementation of the proposal and comments on proposed mitigation measures for these adverse affects.

This notice also serves as the Corps of Engineers' request to the West Virginia Department of Environmental Quality to act on Section 401 Water Quality Certification for the following application.

APPLICANT: City of New Martinsville
191 Main Street
New Martinsville, West Virginia 26155

LOCATION: The proposed project is located along the left descending bank of the Ohio River, adjacent to the existing Willow Island Locks and Dam project, 161.7 miles downstream of Pittsburgh, Pennsylvania near Waverly, Pleasants County, West Virginia.

DESCRIPTION OF PROPOSED WORK: The applicant is requesting authorization for impacts to waters of the United States associated with the construction of the Willow Island Hydroelectric Project. The proposed project would include a new hydropower plant adjacent to the existing Willow Island Locks and Dam. Construction and operation of the Willow Island Hydroelectric Project was licensed by the Federal Energy Regulatory Commission (FERC) as Project No. 6902.

The proposed project encompasses approximately 32-acres of land and would consist of the following: temporary construction features, including a temporary cofferdam and a temporary barge fleeting area; a powerhouse; new transmission line; an excavated approach channel to the hydropower plant and an excavated exit channel; a permanent road crossing; and temporary and permanent recreational facilities. The proposed project may also include the construction of a navigation feature if this type of structure is necessary to mitigate for impacts on the discharge flow of the dam. Detailed description of these features are included below.

Temporary Construction Features: In order to construct the proposed powerhouse, the applicant proposes to install a temporary cofferdam. The proposed cofferdam would extend approximately 325-ft upstream and approximately 515-ft downstream of the Willow Island Dam. The cofferdam would temporarily block one spillway bay (Bay 9). This spillway bay would be taken out of service during construction. Fill material would also be placed within spillway Bay 8 to assist in maintaining the stability the cofferdam while it is dewatered. Portions of the proposed cofferdam would be constructed using barge-mounted equipment working in the river.

The landside portion of the cofferdam would be constructed by excavating approximately 63,000 cubic yards of material from the existing shoreline. A cut-off wall would be installed along the centerline of the landside cofferdam and would extend to bedrock. The riverside of the cofferdam would be constructed of approximately fifteen 63'-diamteter sheet pile cells. The cells would be constructed by driving sheet piles into bedrock and backfilling the cells with free-draining materials. Fill material would be obtained from on-site sources or would be imported. Rip rap would be placed along the riverward face of the cells to prevent scouring. A fill berm would be placed on the inside of the cells to bolster their stability for the 100-year design flood when the area within the cofferdam is dewatered. A dewatering system and flood control structure would be installed on the downstream side of the cofferdam.

Once dewatered, this area would be excavated for construction of the proposed powerhouse. Excavated materials would be disposed of in identified disposal areas within the upland areas of the 32-acre project area. Approximately 150,000 cubic yards of clean sand and gravel would be stockpiled for later use. Unsuitable foundation material would be removed by conventional landside excavation or dredging from the footprints of the landside and cellular cofferdams. Riprap within the footprint of the cofferdam would be removed and stockpiled for future use. Approximately 150 linear feet of the upstream embankment section and 200 linear feet of the downstream embankment for the cofferdam would be protected with rip rap or other bank stabilization materials.

Construction of the proposed project would also include a temporary barge unloading facility. This facility would be used to unload the turbine/generator parts and other construction equipment.

Two existing concrete-capped coffer cells for a fixed weir section of the dam are located on the left descending bank of the river. These cells would be demolished in conjunction with the excavation activities for the proposed powerhouse. Once the powerhouse construction is complete, the cofferdams would be removed. Excavated materials from within the cells and from the weighing berms would be spoiled in the identified disposal areas. Sheet pile material would be salvaged.

Powerhouse: The proposed powerhouse would be built into the existing shoreline and would contain two 17.5 Megawatt generating units. A proposed intake trash rack, intake bulkhead, emergency closure gate and a draft tube bulkhead would be installed.

The concrete reinforced powerhouse would be founded on bedrock and would enclose two horizontal shaft bulb turbines. The applicant has indicated the proposed powerhouse would also contain two oil water transformers, an oil purification system, a closed coolant system, digital governors, and a reserve auxiliary transformer with a connection to the local power distribution system.

Retaining walls would be constructed along the landward side of the powerhouse, upstream and downstream of the structure. A permanent sheet-pile cutoff would be installed in the bank and would tie into the upstream retaining wall adjacent to the powerhouse. A concrete gravity dam would tie the powerhouse to the existing dam.

Transmission Line: The proposed project would include a new transmission line that would extend from the proposed powerhouse approximately 1.6 miles to an existing substation. The route of the proposed transmission line is shown in the attached drawings.

Approach and Exit Channels: The proposed project would include the excavation of a 980-foot-long approach channel upstream of the proposed power house and the excavation of an 865-foot-

long exit channel downstream of the proposed power house. The approach channel would very in widths from 122 feet to 320 feet. The proposed exit channel would vary in width from 114 feet to 190 feet.

The approach and exit channels within the area of the cofferdam would be excavated in conjunction with the powerhouse construction. Outside the cofferdam footprint, the channels would be excavated by conventional dredging or a clamshell dredge. Any excavated materials would be spoiled in the areas identified on the attached drawings.

The shoreline adjacent to the proposed approach and exit channels would be protected within permanent slope protection. Approximately 750-ft of the river bank adjacent to the approach channel would be protected with rip rap or other bank stabilization materials. The landside bank of the approach channel would terminate at the proposed concrete retaining wall of the proposed powerhouse. The proposed bank stabilization measures would include approximately 9,800 cubic yards of rip rap and 4,900 cubic yards of bedding.

Road Crossing: An existing culvert within Cow Creek would be extended to accommodate the construction of a wider access road. The proposed culvert would consist of corrugated metal similar to the existing culvert. Reinforced concrete wing walls would be constructed at the upstream end of the culvert. Installation of the culvert would impact approximately 110 linear feet of Cow Creek and 0.26 acres of one wetland abutting Cow Creek. As mitigation for the proposed wetland impacts, the applicant has proposed to obtain wetland credit from an approved In-Lieu Fee Program.

Recreational Facilities: As required by the FERC license, the proposal includes temporary and permanent recreational facilities.
Temporary Recreational Facilities: The proposed temporary recreational facility would include a parking area, access trail, and a fishing pier. These temporary facilities would be installed downstream of the proposed powerhouse prior to construction. The proposed fishing pier would be a steel 150-ft long, 8-ft wide catwalk structure extending into the river at an angle. The proposed walkway would be approximately 130-ft long and would consist of a 4-ft wide gravel pathway. The majority of the features for the temporary recreational facility would be constructed using land-based equipment. The proposed fishing pier would be installed from working, small barges and boats in the river.

Permanent Recreational Facilities: The proposed permanent recreational facility would include a fishing pier, a paved walkway, a parking area, access path, and public restrooms. The permanent fishing pier would be the same pier constructed for the temporary recreational area. The proposed walkway would extend along approximately 200-ft of shoreline and would consist of a 4-ft wide concrete pathway. The armoring of the downstream riverbank (adjacent to the exit channel) would include minor variations in the stepped slope to provide fish attractant areas.

Navigation Feature: The proposed project may include the addition of a navigation feature/groin. This feature would be added, if needed, to mitigate for any impacts of the powerhouse discharge flow on the navigation of barges and tows in and out of the existing lock. The need for and location of this structure will be based on physical hydraulic model studies. If needed, the applicant has indicated the proposed groin would be approximately 280-ft long and would be constructed of approximately 13,100 cubic yards of rock fill covered with approximately 5-ft (9,400 cubic yards) of rip rap. Installation of this feature would include the removal of approximately 8,000 cubic yards of unsuitable foundation material within the river. This material would be removed by either dredging or clamshell equipment working in the river. The navigation groin would also be installed by equipment (i.e. barges) working in the river. No dewatering is proposed for this construction.

The applicant has indicated construction of the proposal would take approximately 4.5 years. To accommodate this construction schedule, any authorization for this proposal would be valid for a maximum of ten years. The applicant anticipates no maintenance dredging of the facility will be required. The proposal does not include a request for any long-term maintenance dredging.

Plans of the proposal are attached to this notice.

Alternatives Analysis: The applicant has indicated approximately 0.26 acres of wetland would be impacted as a result of the proposal. Wetlands are special aquatic sites as defined in the 404(b)(1) Guidelines of the Clean Water Act. Practicable alternatives not involving such discharges into special aquatic sites are presumed to have less adverse impacts to the aquatic system. The applicant is required to provide an alternative analysis that must overcome this presumption prior to receiving authorization for the placement of fill material.

WATER QUALITY CERTIFICATION: A Section 401 Water Quality Certification is required for this project. It is the applicant's responsibility to obtain certification from the West Virginia Department of Environmental Quality.

NATIONAL ENVIRONMENTAL POLICY ACT: In 1988, FERC developed a Final Environmental Impact Statement (FEIS) titled *Hydroelectric Development in the Upper Ohio River Basin.* This report was prepared in connection with applications for FERC licenses to construct, operate, and maintain twenty-four (24) proposed hydroelectric projects at nineteen (19) sites in the Upper Ohio River Basin. One of the submitted applications is the Willow Island Hydroelectric Project. Upon completion of the FEIS and review of the license application, FERC issued a license for the Willow Island Hydropower project as required under the Federal Power Act. This license is referred to as FERC Project No. 6902.

Prior to issuance of any permit, the Corps must comply with the procedures of the National Environmental Policy Act (NEPA). The District has reviewed the FEIS referenced above. Given the time passed since this report was prepared (~20 years) and the availability of updated site-

specific information, the Corps will be preparing a supplemental NEPA document for this proposal. At this time, the Corps anticipates an Environmental Assessment will be prepared. In the preparation of this document, we will rely on any pertinent information in the FEIS.

HISTORIC & CULTURAL RESOURCES: The Corps is mandated by the National Historic Preservation Act (NHPA) to ensure that no federal undertaking, including a Corps permit action, which may affect historic resources, is commenced before the impacts of such action are considered and the Advisory Council on Historic Preservation (ACHP) and the State Historic Preservation Office are provided an opportunity to comment as required by the NHPA, 36 C.F.R. 800, and 33 C.F.R. 325, Appendix C.

FERC considered impacts to historic properties associated with this proposal in the FEIS. An article of the FERC license, Article 414, states that licensee must consult with the West Virginia State Historic Preservation Office (SHPO) and the Corps prior to the state for any land-clearing or land disturbing activities. This article states, if the licensee discovered any previously unidentified archaeological or historic propertied during the course of constructing or developing the project, the licensee shall stop all land-disturbing or land-clearing and consult further with the Corps and the SHPO. After this consultation, the licensee shall prepare a cultural resource management plan and shall submit a copy of this plan to the Corps' and FERC for approval.

Since the FEIS was prepared, the ACHP's regulations on the Protection of Historic Properties (36 CFR Part 800) have been revised. Furthermore, additional archaeological investigations have recently been performed within the proposed project area. As such, the Corps has determined the findings of the FEIS regarding impacts to historic properties associated with the Willow Island Hydropower Project and the requirements of Article 411 of the FERC license are not sufficient to fulfill the Corps responsibilities under the NHPA. The Corps determinations on impacts to historic properties are described below.

The National Register of Historic Places (NRHP) has been consulted and it has been determined there are no properties currently listed on the register that are in the area affected by the proposed project. The Willow Island Locks and Dam are considered a contributing property within the Ohio River Navigation System, which is eligible for listing on the NRHP. A review of the currently available information for this proposal indicates Willow Island Locks and Dam, a component of the NRHP-eligible Ohio River Navigation System, would be impacted by construction of the proposed project. The Corps is reviewing this proposal and, in consultation with the WVSHPO will determine if this impact will adversely affect this historic property.

Prior to the submission of a permit application to this office, the applicant consulted with the West Virginia Division of Culture and History [the West Virginia State Historic Preservation Office (WVSHPO)] for information on impacts to historic properties. Through letter dated October 24, 2007, the WVSHPO indicated intact soils are present within the site and there is a potential for buried archaeological deposits. The WVSHPO recommended the applicant conduct a Phase I subsurface investigation within the site prior to the initiation of any construction

activities. WVSHPO indicated this investigation should document the extent of any prior disturbance within the project area, assess the potential for any intact soils to contain archaeological deposits, and explore any archaeological deposits encountered. WVSHPO also requested additional information in order to determine if the proposed project would result in impacts to architectural resources.

In response to this information, the applicant performed additional deep testing within the site. The findings of this investigation are described in a report entitled "Archaeological and Geomorpholigical Deep Testing of the Proposed Willow Island Hydroelectric Plant at Willow Island in Pleasants County, West Virginia." The investigation identified Site 46PL66 and indicated this site contains intact archaeological deposits. Site 46PL66 is within the footprint of the proposed powerhouse. Although a formal NRHP-eligibility determination for Site 44PL66 has not been made, available information indicates this site is eligible for listing on the NRHP.

For construction of the proposed power plant, the applicant is proposing to excavate a substantial area of the existing shoreline. This proposal will adversely affect Site 46PL66. A copy of this public notice will be furnished to the WVSHPO for their review. Our office, in consultation with the WVSHPO, will continue to evaluate the adverse impacts to historic properties associated with this proposal. If after consultation, it is determined the proposed project would adversely affect historic properties, it is likely a draft Memorandum of Agreement (MOA) detailing mitigation measures for impacts to historic properties would be required. Given the location of the archaeological deposits and the proposed footprint for the hydropower plant, it is likely data recovery will be proposed as the preferred mitigation measure for buried archaeological resources.

The Corps of Engineers is soliciting comments from the public; Federal, state, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the proposed adverse effect on historic properties. Should you wish to express your views on the undertaking's effects on historic properties, or provide comments or objections to the proposed MOA, please forward this information to our office prior to the close of the comment period for this notice. Please indicate in any correspondence if you would like to continue as a consulting party for resolution of any adverse affects to historic properties associated with this undertaking.

THREATENED & ENDANGERED SPECIES: This project is located within the known or historic range of the eastern cougar (E), the Indiana bat (E), the fanshell mussel (E), the pink mucket pearly mussel (E), the sheepnose mussel (c), the bald eagle (SC), and the snuffbox mussel (SC).

Based on the location and nature of the project and the absence of suitable habitat within the proposed impact, this office has determined the proposed project will have no affect on the eastern cougar, the Indiana bat, and the bald eagle. The Corps has determined the proposed project may affect the fanshell mussel, pink mucket pearly mussel, the sheepnose mussel, and the snuffbox mussel.

The applicant has conducted a mussel survey and provided a copy of the survey report to this office and the U.S. Fish and Wildlife Service (USFWS). No federally listed threatened or endangered mussel species were collected during the survey. Once the Corps has completed our review of this survey, in consultation with the USFWS, this office will determine the affects to the above listed mussel species, if any.

This public notice serves as a request to the USFWS for any additional information they may have on whether any listed or proposed to be listed endangered or threatened species may be present in the area which would be affected by the activity, pursuant to Section 7(c) of the Endangered Species Act of 1972 (as amended).

PUBLIC INTEREST: Any person who has an interest, which may be adversely affected by the issuance of a permit, may request a public hearing. The request must be submitted in writing to the District Engineer on or before the expiration date of this notice and must clearly set forth the interest which may be adversely affected and the manner in which the interest may be adversely affected by the activity.

Interested parties are invited to state any objections they may have to the proposed work. The decision whether to issue a permit will be based on an evaluation of the probable impact including cumulative impacts of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit, which reasonably may be expected to accrue from the proposal, must be balanced against its reasonably foreseeable detriments. All factors that may be relevant to the proposal will be considered, including the cumulative effects thereof; among those are: conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership and, in general, the needs and welfare of the people. In addition, the evaluation of the impact of the activity on the public interest will include application of the guidelines promulgated by the Administrator, Environmental Protection Agency, under the authority of Section 404(b) of the Clean Water Act. Written statements on these factors received in this office on or before the expiration date of this public notice will become a part of the record and will be considered in the final determination. A permit will be granted unless its issuance is found to be contrary to the public interest.

The Corps of Engineers is soliciting comments from the public; Federal, state, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an

Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

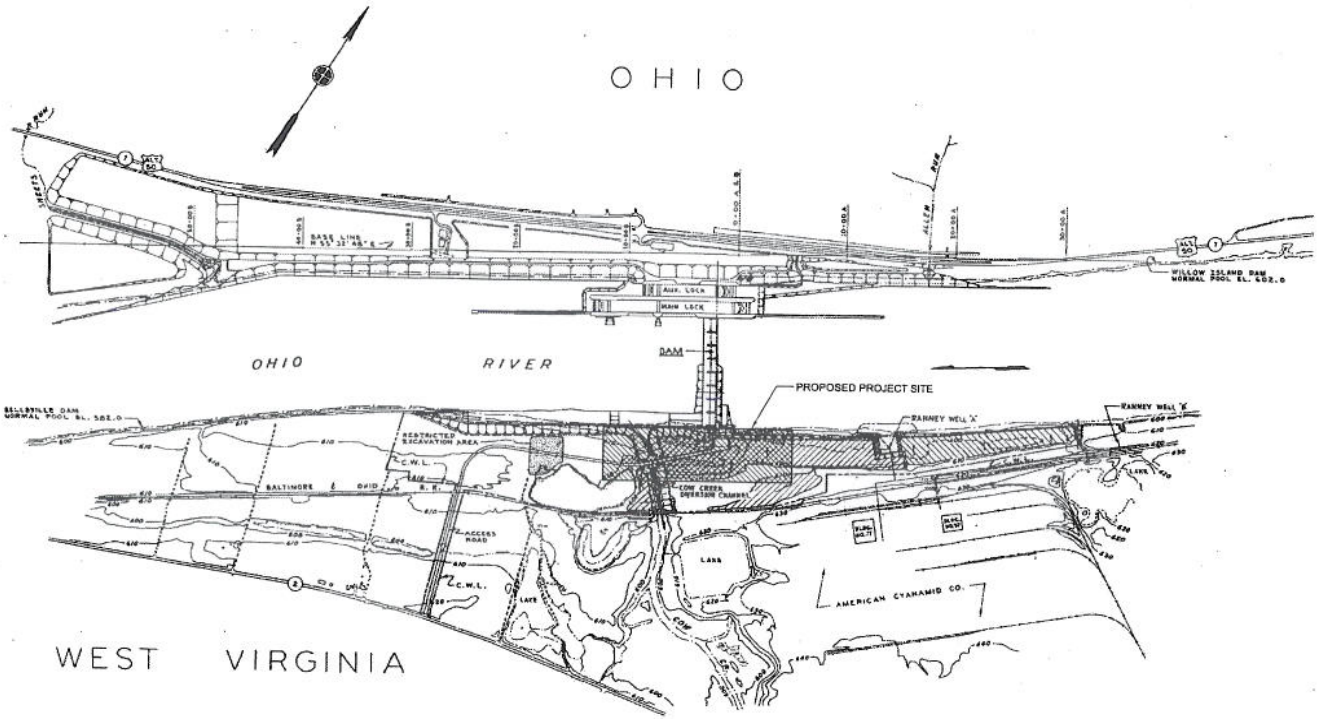
CLOSE OF COMMENT PERIOD: All comments pertaining to this Public Notice must reach this office on or before the close of the comment period listed on page one of this Public Notice. Persons wishing to submit comments, objections or requests for public hearings concerning the Corps of Engineers permit should write:

U.S. Army Corps of Engineers
ATTN: CELRH-OR-F, Public Notice No. LRH-2008-00293-OHR
502 8th Street
Huntington, West Virginia 25701-2070

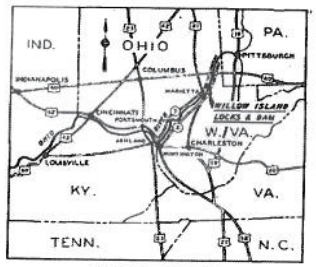
Please note, the names and addresses of those who submit comments in response to this public notice become part of our administrative record and, as such, are available to the public under provisions of the Freedom of Information Act. Thank you for your interest in our nation's water resources. If you have any questions concerning this public notice, please call Ms. Susan A. Fields of my staff at 304-399-5210.

Ginger Mullins
Chief, Regulatory Branch

(O,W)



SITE PLAN



VICINITY MAP

LOCATION MAP

WILLOW ISLAND HYDROELECTRIC PROJECT FERC LICENSE # 6902
AMERICAN MUNICIPAL POWER - OHIO, INC. 2600 AIRPORT DRIVE, COLUMBUS, OHIO 43219
PROJECT LOCATION MAP

Willow Island Hydropower, LRH-2008-00293-OHR
Pleasants County, West Virginia
Location Map
Sheet 1 of 17

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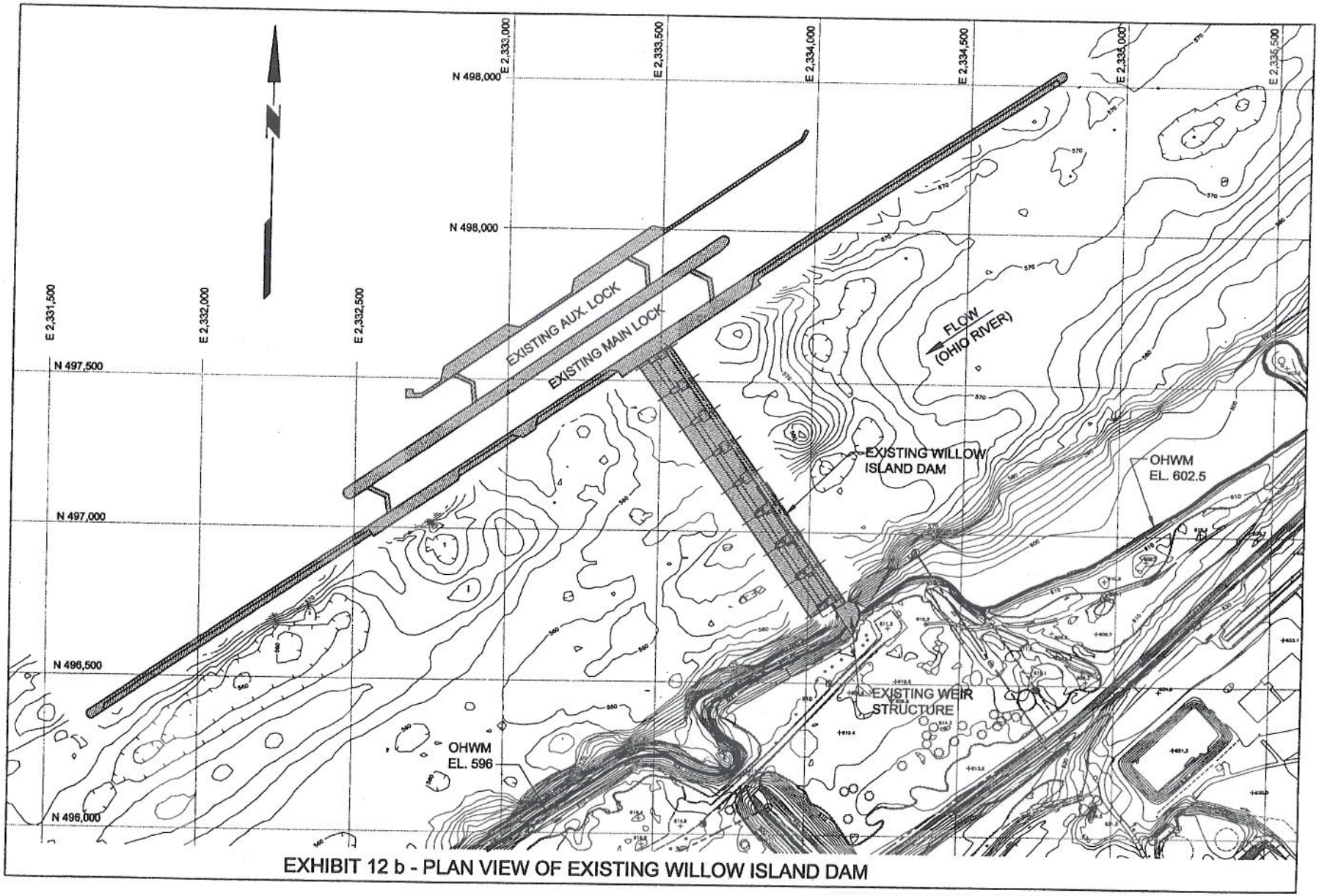
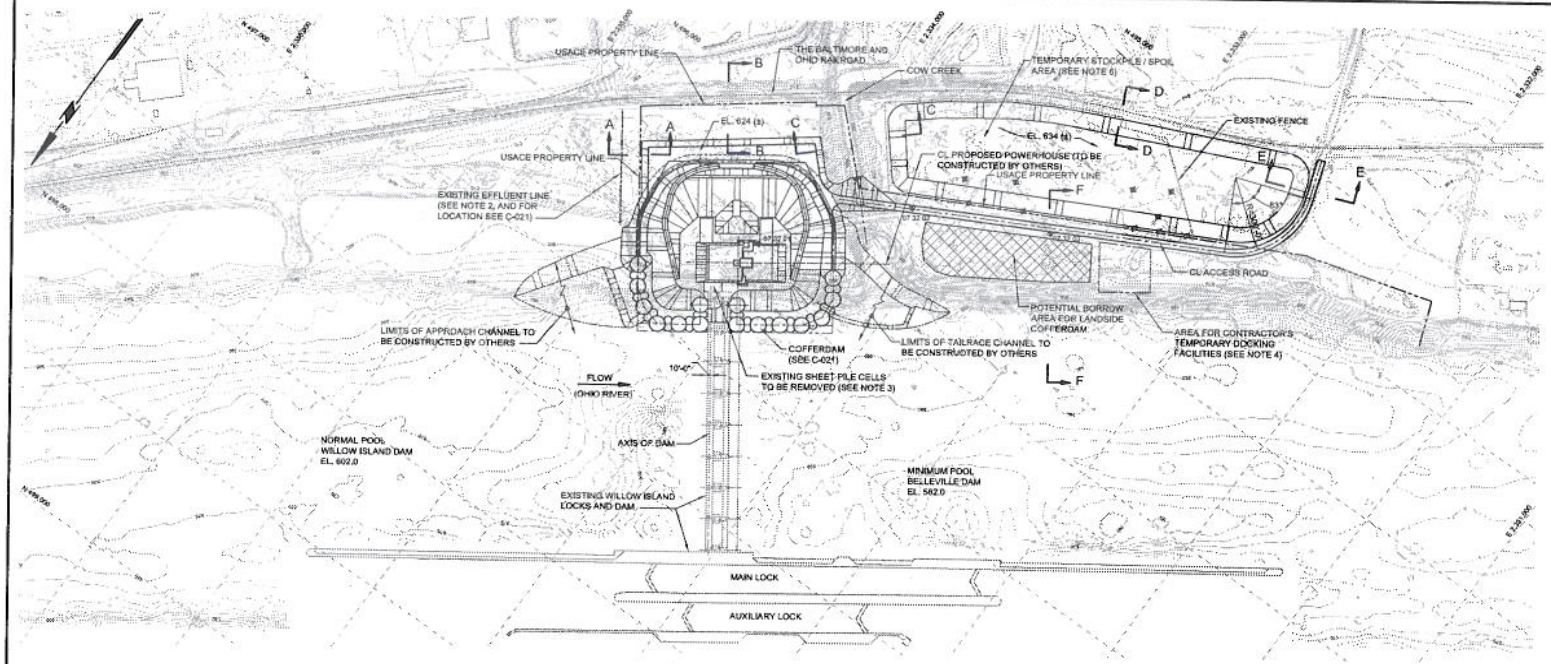


EXHIBIT 12 b - PLAN VIEW OF EXISTING WILLOW ISLAND DAM

Willow Island Hydropower, LRH-2008-00293-OHR
Pleasants County, West Virginia
Plan View – Existing Site Features
Sheet 2 of 17

5275-C-012



GENERAL PROJECT PLAN

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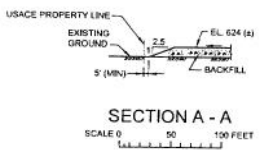

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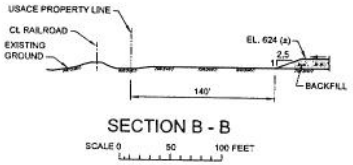

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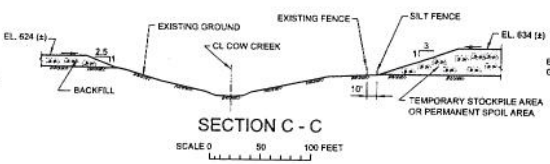

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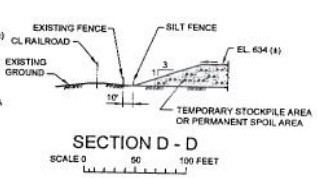

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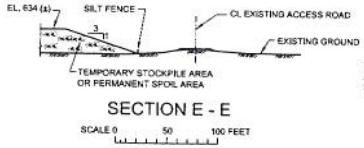

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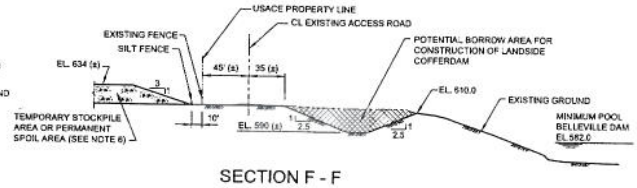

SECTION F - F

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LAGEND:

- EXISTING MONITORING WELL TO BE RELOCATED
- NEW MONITORING WELL TO BE INSTALLED WHERE DIRECTED BY THE OWNER'S ENGINEER

REFERENCE DRAWINGS:

PROJECT SITE TOPOGRAPHY	5275-C-008
COFFERDAN AND EXCAVATION PLAN	5275-C-021
SECTIONS AND DETAILS	5275-C-022 AND 023

NOTES:

1. CONSTRUCTION ACTIVITIES AT OR NEAR THE EXISTING DAM WILL REQUIRE CLOSE COORDINATION WITH AND APPROVAL BY THE U.S. ARMY CORPS OF ENGINEERS.
2. THE EXISTING 16" (DUCTILE IRON PIPE) DIP EFFLUENT LINE, MANHOLE #3 AND OUTFALL STRUCTURE WILL REMAIN IN OPERATION DURING THE ENTIRE CONSTRUCTION PERIOD. THE CONTRACTOR IS NOT RESPONSIBLE TO OPERATE THIS LINE, BUT SHALL TAKE ALL NECESSARY MEASURES SO THAT IT IS NOT DAMAGED BY CONSTRUCTION ACTIVITIES, AND IT REMAINS IN OPERATION AT ALL TIMES.
3. EXISTING SHEETPILE CELLS AND CONCRETE CAP, AND SHEET PILE CUTOFF WALL (WITHIN LIMITS OF EXCAVATION) SHALL BE REMOVED ONLY AFTER THE ENTIRE COFFERDAM COMPLETELY ENCLOSES THE CONSTRUCTION AREA, UNLESS OTHERWISE APPROVED BY THE OWNER'S ENGINEER.
4. TEMPORARY DOCKING FACILITIES, IF INSTALLED, SHALL BE REMOVED AT THE COMPLETION OF CONSTRUCTION. EXACT LOCATION OF AREA TO BE DETERMINED IN THE FIELD.
5. GRASS COVER SHALL BE PROVIDED ON ALL AREAS, INCLUDING SPOIL AREAS, DISTURBED DURING CONSTRUCTION IN ACCORDANCE WITH THE OWNER'S REQUIREMENTS. EXACT LIMITS WILL BE DETERMINED IN THE FIELD BY THE OWNER'S ENGINEER.
6. EXCAVATED MATERIALS SHALL BE STOCKPILE / SPOILED DIRECTLY ON EXISTING GROUND. THE ENTIRE AREA SHALL BE CLEARED, BUT GRUBBING AND REMOVAL OF TOP SOIL IS NOT REQUIRED.

WILLOW ISLAND HYDROELECTRIC PROJECT
FERC LICENSE # 6902
AMERICAN MUNICIPAL POWER - OHIO, INC.

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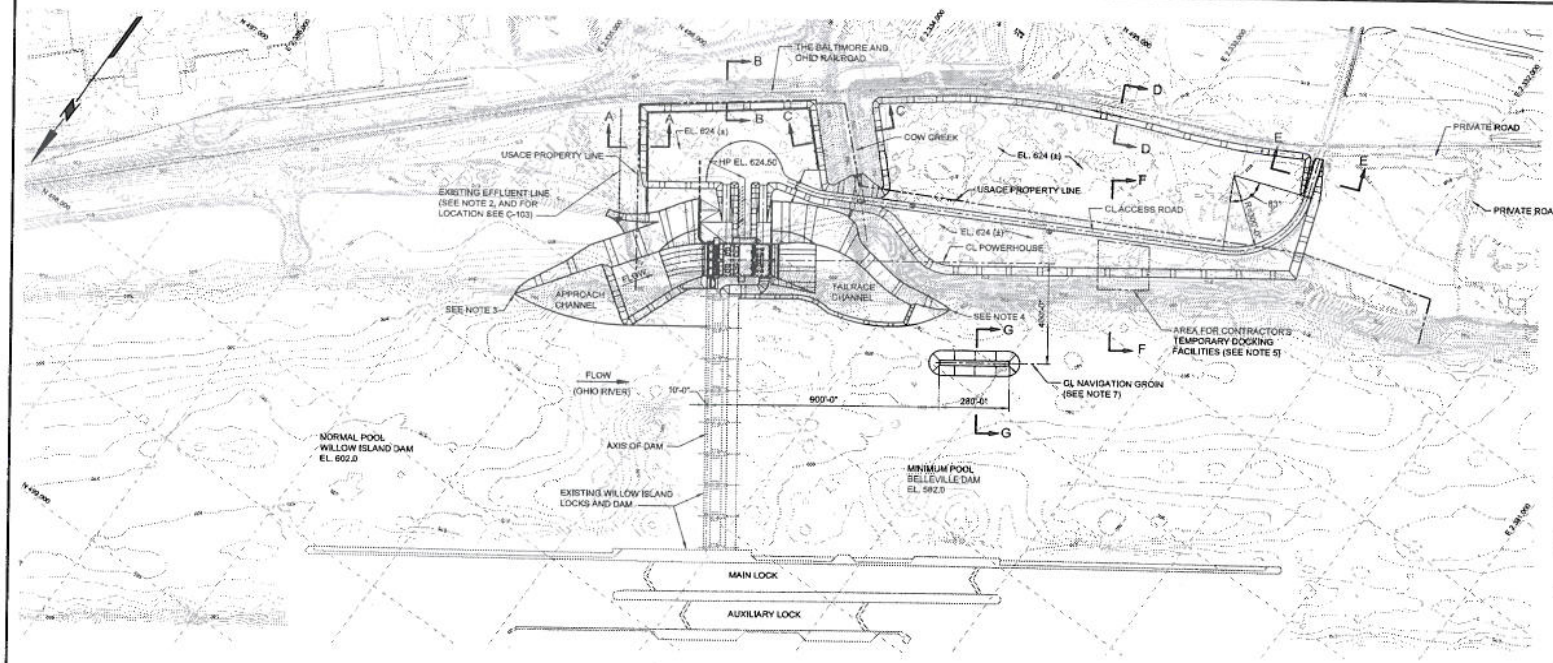
Willow Island Hydropower, LRH-2008-00293-OHR
Pleasants County, West Virginia
Gen. Plan & Section View - Coffer Dam and Temporary Dock
Sheet 3 of 17

Willow Island Hydropower, LRH-2008-00293-OHR
Pleasants County, West Virginia
General Plan View of Approach and Exit Channels, Navigation Groin, and Temporary Dock
Sheet 4 of 17

5275-C-102



GENERAL PROJECT PLAN

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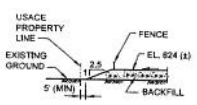
1" = 200'

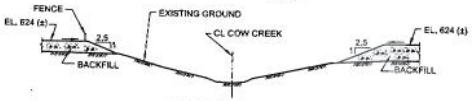


SECTION A - A

SCALE 0 50 100 FEET
1" = 50'

SECTION B - B

SCALE 0 50 100 FEET
1" = 50'



SECTION C - C

SCALE 0 50 100 FEET
1" = 50'

SECTION D - D

SCALE 0 50 100 FEET
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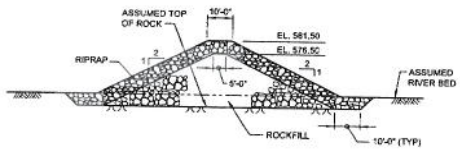
SECTION E - E

SCALE 0 50 100 FEET
1" = 50'

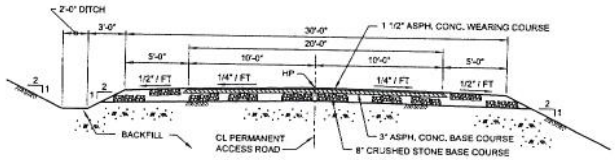


SECTION G - G
(SEE NOTE 7)

SCALE 0 20 40 FEET
1" = 20'

SECTION F - F

SCALE 0 50 100 FEET
1" = 50'



TYPICAL ROADWAY DETAIL

SCALE 0 4 8 FEET
1/4" = 1'-0"

REFERENCE DRAWINGS:

PROJECT LOCATION MAP	5275-C-101
PROJECT GENERAL ARRANGEMENT	5275-C-103 TO C-105
PROJECT SITE TOPOGRAPHY	5275-C-108

NOTES:

1. CONSTRUCTION ACTIVITIES AT OR NEAR THE EXISTING DAM WILL REQUIRE CLOSE COORDINATION WITH AND APPROVAL BY THE U.S. ARMY CORPS OF ENGINEERS.
2. THE EXISTING 16" (DUCTILE IRON PIPE) DIP EFFLUENT LINE, MANHOLE #3 AND OUTFALL STRUCTURE WILL REMAIN IN OPERATION DURING THE ENTIRE CONSTRUCTION PERIOD. THE CONTRACTOR IS NOT RESPONSIBLE TO OPERATE THIS LINE, BUT SHALL TAKE ALL NECESSARY MEASURES SO THAT IT IS NOT DAMAGED BY CONSTRUCTION ACTIVITIES, AND IT REMAINS IN OPERATION AT ALL TIMES.
3. UPSTREAM LIMIT FOR APPROACH CHANNEL EXCAVATION AND RIPRAP PROTECTION IS APPROXIMATE. EXACT LOCATION TO BE DETERMINED IN THE FIELD AS DIRECTED BY THE ENGINEER.
4. DOWNSTREAM LIMIT FOR TAILRACE CHANNEL EXCAVATION AND RIPRAP PROTECTION IS APPROXIMATE. EXACT LOCATION TO BE DETERMINED IN THE FIELD AS DIRECTED BY THE ENGINEER.
5. TEMPORARY DOCKING FACILITIES, IF INSTALLED, SHALL BE REMOVED AT THE COMPLETION OF CONSTRUCTION. EXACT LOCATION OF AREA TO BE DETERMINED IN THE FIELD.
6. GRASS COVER SHALL BE PROVIDED ON ALL AREAS, INCLUDING SPOIL AREAS, DISTURBED DURING CONSTRUCTION IN ACCORDANCE WITH THE SPECIFICATIONS. EXACT LIMITS WILL BE DETERMINED IN THE FIELD BY THE ENGINEER.
7. THE EXACT LOCATION AND SIZE OF THE NAVIGATION GROIN (IF REQUIRED) SHALL BE DETERMINED BY PHYSICAL HYDRAULIC MODEL STUDIES.
8. APPROACH AND TAILRACE CHANNEL GEOMETRY IS PRELIMINARY AND SUBJECT TO CHANGE. EXACT CONFIGURATION SHALL BE AS DETERMINED BY DETAILED HYDRAULIC STUDIES.

DSGN.	-	REVIEWED					
CHKD.	-	CIVIL					
DWN.	-	MECH.					
CHKD.	-	ELECT.					
SUBM.	-						
APPROVED		REV. NO.	DWG. TRANSMITTAL / LETTER NO.	DATE	NATURE OF REVISION	BY	CHKD. / APPD.

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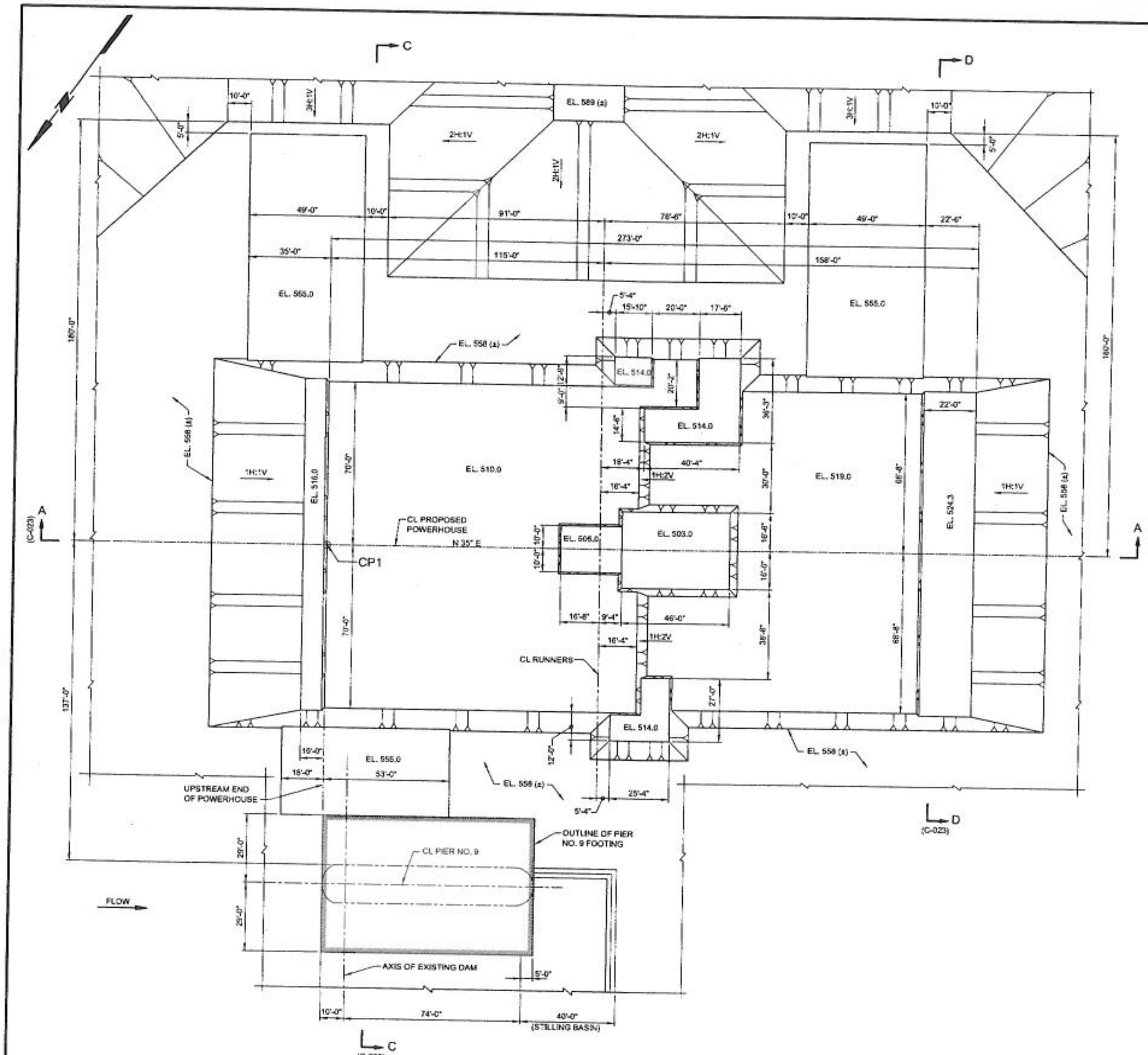
WILLOW ISLAND HYDROELECTRIC PROJECT
FERC LICENSE # 6902

AMERICAN MUNICIPAL POWER - OHIO, INC.
2600 AIRPORT DRIVE, COLUMBUS, OHIO 43219

GENERAL PROJECT PLAN

Willow Island Hydropower, LRH-2008-00293-OHR
Pleasants County, West Virginia
Gen. Plan & Section View - Approach & Exit Channels, and Navigation Groin
Sheet 5 of 17



PLAN
(ENLARGED ROCK EXCAVATION DETAIL)
(C-021)

SCALE 0 20 40 FEET

REFERENCE DRAWINGS:

WORK THIS DRAWING WITH	5275-C-023
COFFERDAM AND EXCAVATION - PLAN	5275-C-021

NOTES:

1. THE EXCAVATION SLOPE FOR ROCK SHALL BE 1H:5V UNLESS OTHERWISE NOTED OR DIRECTED BY THE OWNER'S ENGINEER.

WILLOW ISLAND HYDROELECTRIC PROJECT
FERC LICENSE # 6902

AMERICAN MUNICIPAL POWER - OHIO, INC.
2600 AIRPORT DRIVE, COLUMBUS, OHIO 43219

COFFERDAM AND EXCAVATION
SECTIONS AND DETAILS

5275-C-022

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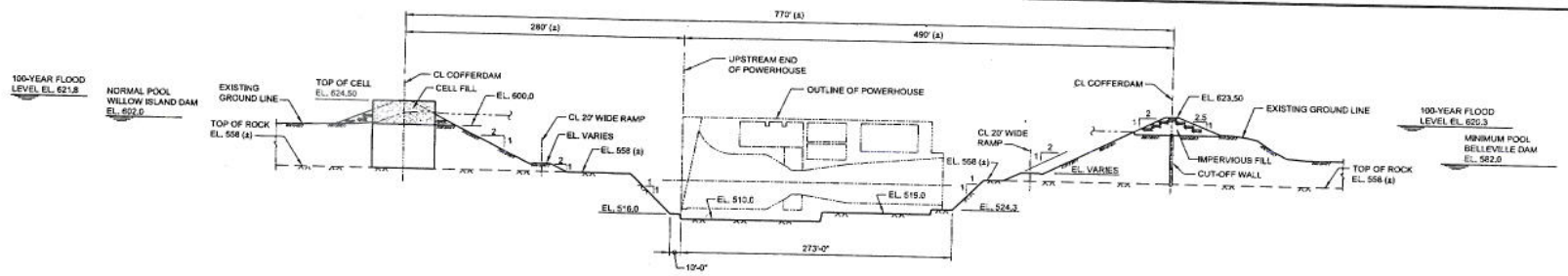
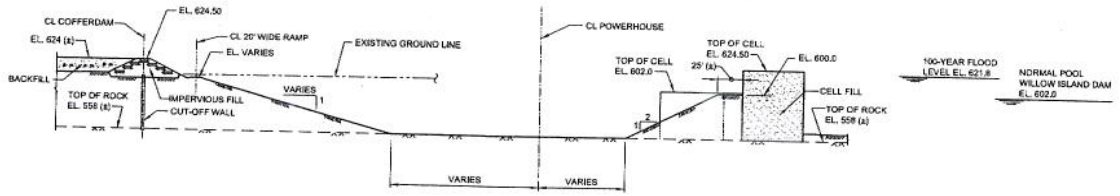
Willow Island Hydropower, LRH-2008-00293-OHR
Pleasants County, West Virginia
Plan View - Proposed Powerhouse
Sheet 6 of 17

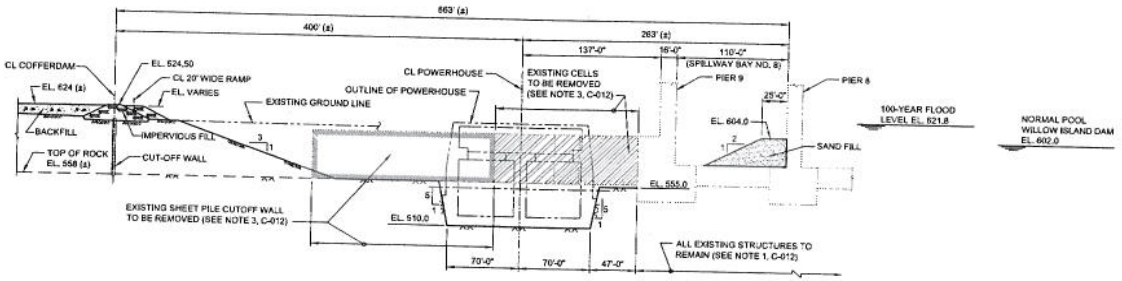
5275-C-023



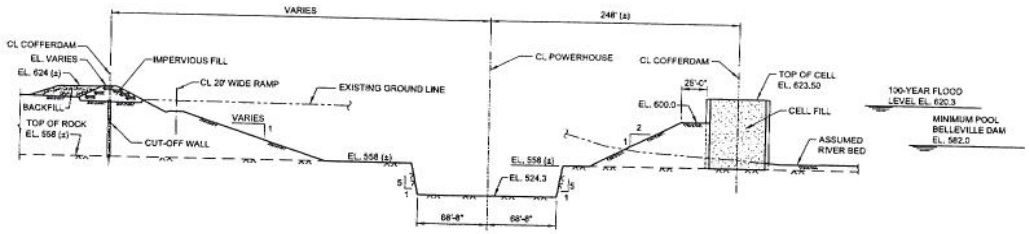
SECTION A - A
(C-021)
SCALE 0 50 FEET



SECTION B - B
(C-021)
SCALE 0 50 FEET



SECTION C - C
(C-021)
SCALE 0 50 FEET



SECTION D - D
(C-021)
SCALE 0 50 FEET

REFERENCE DRAWINGS:
WORK THIS DRAWING WITH 5275-C-022

NOTES:
1. REFER TO OWNER'S REQUIREMENTS FOR ROCK EXCAVATION ADJACENT TO PIER NO. 9.

WILLOW ISLAND HYDROELECTRIC PROJECT
FERC LICENSE # 6902
AMERICAN MUNICIPAL POWER - OHIO, INC.
2600 AIRPORT DRIVE, COLUMBUS, OHIO 43219
COFFERDAM AND EXCAVATION SECTIONS AND DETAILS

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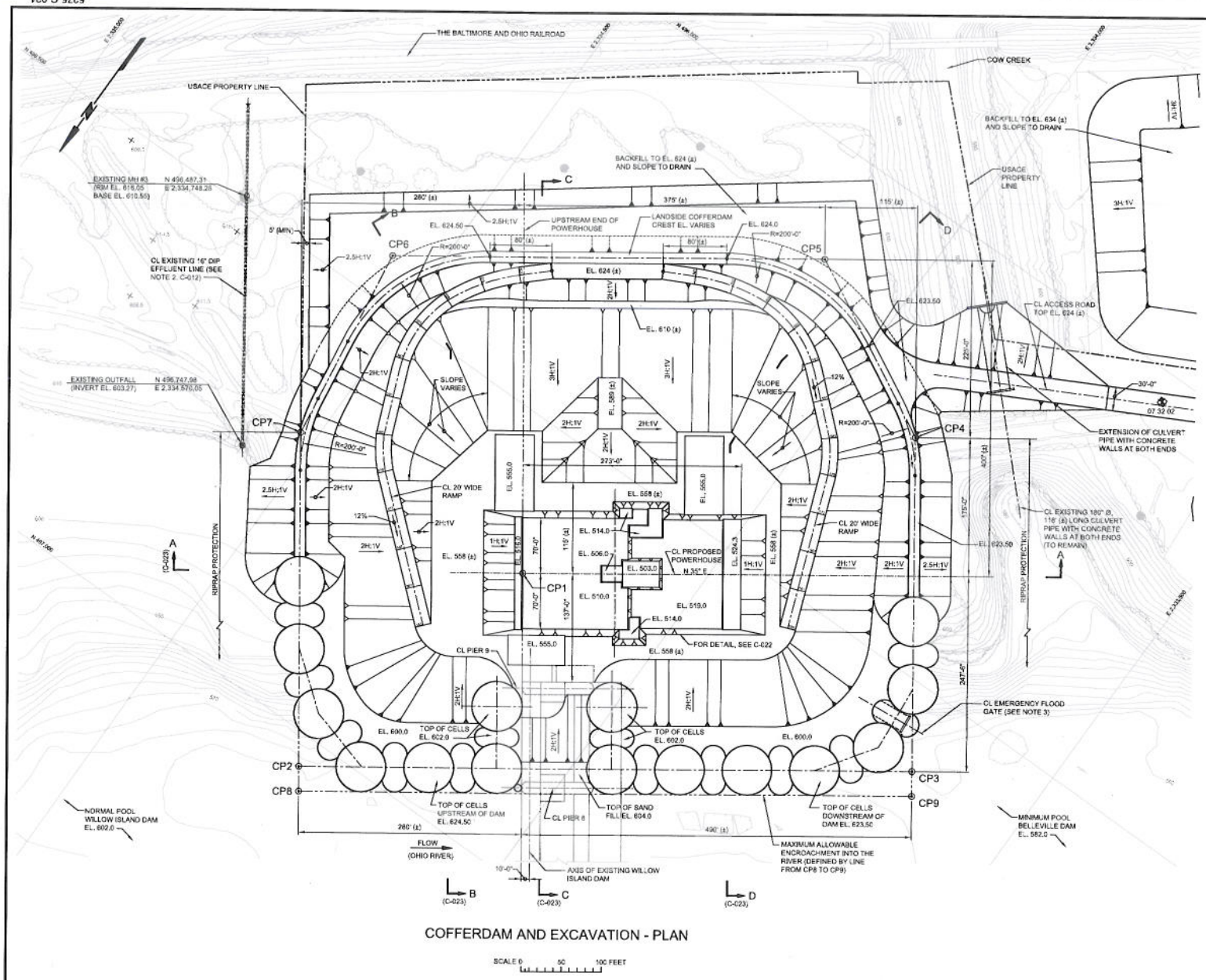
Willow Island Hydropower, LRH-2008-00293-OHR
Pleasants County, West Virginia
Cross Section View - Proposed Powerhouse
Sheet 7 of 17 **(Use with Sheet 6 of 17)**

5275-C-021



COFFERDAM AND EXCAVATION - PLAN

SCALE 0 50 100 FEET

COFFERDAM AND EXCAVATION CONTROL POINTS (SEE NOTE 1)		
POINT	COORDINATES	
	NORTH	EAST
CP1	496,674.83	2,334,190.52
CP2	497,037.47	2,334,278.40
CP3	496,595.83	2,333,647.66
CP4	496,250.42	2,333,889.51
CP5	496,131.81	2,334,112.39
CP6	496,442.07	2,334,555.48
CP7	496,652.07	2,334,520.25
CP8	497,063.15	2,334,260.42
CP9	496,621.50	2,333,629.68

FOR USACE PROPERTY BOUNDARIES AND BENCHMARKS "07 32 01", "07 32 02" AND "07 32 03" SEE C-008

LEGEND:

- ORIGINAL OR EXCAVATED ROCK SURFACE
- ORIGINAL OR EXCAVATED SOIL SURFACE
- ROCK OR SOIL EXCAVATION AND SLOPE H:V
- FILL (ALL MATERIALS) AND SLOPE H:V
- RIPRAP
- BEDDING
- CONCRETE
- BACKFILL

REFERENCE DRAWINGS:

PROJECT SITE TOPOGRAPHY	5275-C-008
GENERAL PROJECT PLAN	5275-C-012
COFFERDAM AND EXCAVATION SECTIONS AND DETAILS	5275-C-022 AND C-023

NOTES:

1. THE CENTERLINE FOR THE CELLULAR COFFERDAM IS BASED ON 63' (±) DIAMETER CELLS. THIS LINE SHALL BE ADJUSTED TO MAINTAIN THE MAXIMUM ALLOWABLE ENCROACHMENT LINE INTO THE RIVER IF THE CONTRACTOR DESIGNED CELLS HAVE DIAMETER OTHER THAN 63' (±).
2. DRAWINGS C-021, C-022 AND C-023 PRESENT THE CONCEPTUAL LAYOUT OF THE COFFERDAM. THE DETAILED DESIGN FOR THE CELLULAR AND LANDSIDE COFFERDAM, CUTOFF WALL, AND GROUND WATER CONTROL SYSTEM SHALL BE CARRIED OUT BY THE CONTRACTOR IN ACCORDANCE WITH THE OWNER REQUIREMENTS.
3. EROSION PROTECTION SHALL BE PROVIDED TO PROTECT THE COFFERDAM FROM SCOUR BY THE EMERGENCY FLOOD GATE DISCHARGE.

WILLOW ISLAND HYDROELECTRIC PROJECT
FERC LICENSE # 6902

AMERICAN MUNICIPAL POWER - OHIO, INC.
2600 AIRPORT DRIVE, COLUMBUS, OHIO 43219

COFFERDAM AND EXCAVATION PLAN

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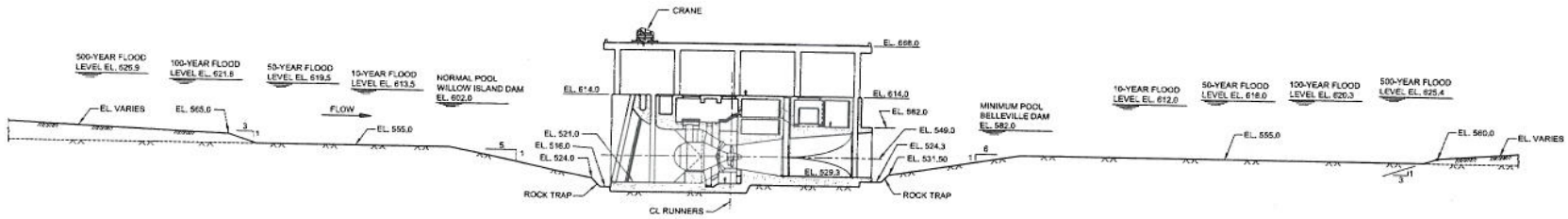
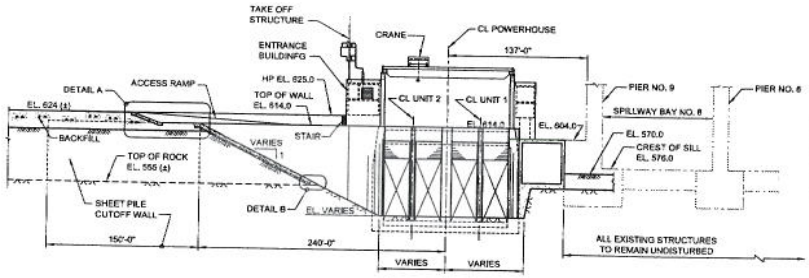
Willow Island Hydropower, LRH-2008-00293-OHR
Pleasants County, West Virginia
Plan View - Prop. Powerhouse & Cofferdam
Sheet 8 of 17

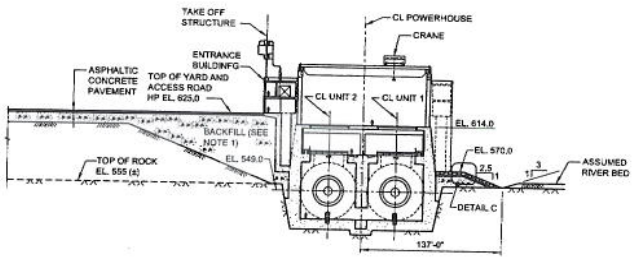
5275-C-104



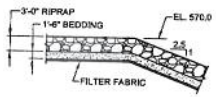
SECTION A - A
(C-103)
SCALE 0 50 100 FEET
1" = 50'



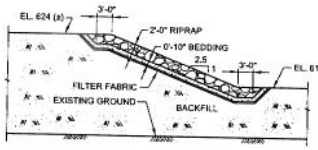
SECTION B - B
(C-103)
SCALE 0 50 100 FEET
1" = 50'



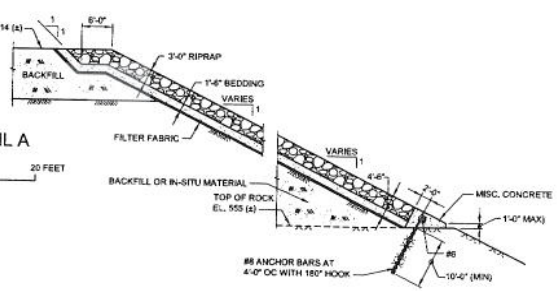
SECTION C - C
(C-103)
SCALE 0 50 100 FEET
1" = 50'



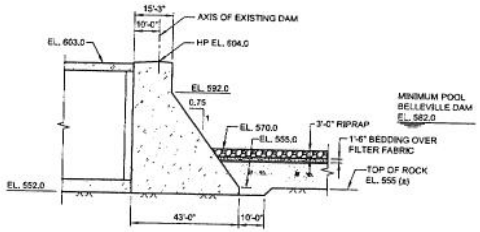
DETAIL C
SCALE 0 10 20 FEET
1" = 10'



DETAIL A
SCALE 0 10 20 FEET
1" = 10'



DETAIL B
SCALE 0 10 20 FEET
1" = 10'



SECTION D - D
(C-103)
SCALE 0 20 40 FEET
1" = 20'

REFERENCE DRAWINGS:
WORK THIS DRAWING WITH 5275-C-103 AND C-105

NOTES:
1. BACKFILL ON THE LANDWARD SIDE OF THE POWERHOUSE, BETWEEN THE UPSTREAM AND DOWNSTREAM WALLS, MAY BE PLACED TO EL.606.0 PRIOR TO CONSTRUCTION OF THE POWERHOUSE ROOF, PROVIDED THAT ALL CONCRETE IN THE POWERHOUSE AND RETAINING WALLS BELOW EL. 606.0 HAS BEEN PLACED AND DESIGN STRENGTH ACHIEVED.
2. CONCRETE FOR DETAIL B SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS.

DSGN.	-	REVIEWED						
CHKD.	-	CIVIL						
DWN.	-	MECH.						
CHKD.	-	ELECT.						
SUBM.	-							
APPROVED		REV. NO.	DWG. TRANSMITTAL LETTER NO.	DATE	NATURE OF REVISION	BY	CHKD.	APPD.

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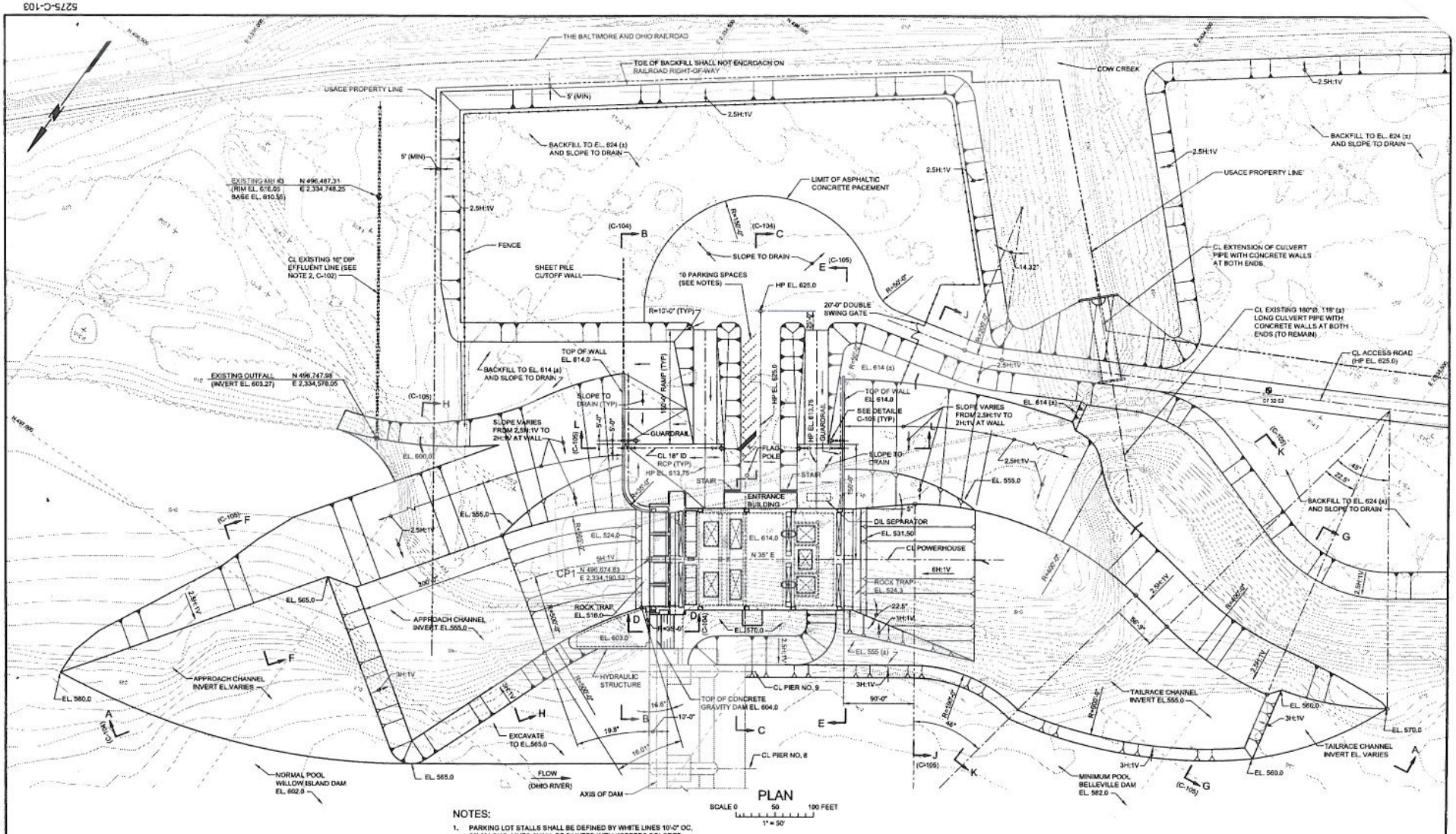
WILLOW ISLAND HYDROELECTRIC PROJECT
FERC LICENSE # 6902
AMERICAN MUNICIPAL POWER - OHIO, INC.
2600 AIRPORT DRIVE, COLUMBUS, OHIO 43219
PROJECT
GENERAL ARRANGEMENT

Willow Island Hydropower, LRH-2008-00293-OHR
Pleasants County, West Virginia
Cross Section View - Prop. Powerhouse & Cofferdam
Sheet 9 of 17 **(Use with Sheet 6 of 17)**



PLAN

SCALE 0 50 100 FEET
1" = 50'

NOTES:

1. PARKING LOT STALLS SHALL BE DEFINED BY WHITE LINES 10'-0" OC, 20'-0" LONG. LINES SHALL BE PAINTED WITH KOPPERS COLORED COURT-COAT, OR EQUAL, OVER BLACKTOP PAVEMENT IN ACCORDANCE WITH PAINT MANUFACTURER'S INSTRUCTIONS. ALL LINES SHALL BE 4 INCHES WIDE.
2. PROVIDE ONE HANDICAPPED PARKING SPACE AT LOCATION INDICATED WITH "H". PROVIDE 5'-0" WIDE ADJACENT AISLE MARKED FOR NO PARKING WITH WHITE STRIPES AND POST MOUNTED HANDICAPPED SIGN.
3. PROVIDE PARKING LOT STOP IN EACH PARKING SPACE, EXCEPT IN HANDICAPPED AISLE SPACE. MOUNT EACH PARKING LOT STOP 1'-0" FROM END OF PARKING SPACE WITH 2 STEEL RODS.
4. STEEL BEAM GUARDRAILS SHALL CONFORM TO WEST VIRGINIA DOT STANDARDS AND SHALL BE PROVIDED WHERE SHOWN ON THE DRAWINGS AND AS DIRECTED IN THE FIELD BY THE ENGINEER.
5. CONSTRUCT FOUR BUMPER STOPS IN FRONT OF ENTRANCE BUILDING AS LOCATED ON 5275-C-132 AND PER DETAIL SHOWN ON 5275-C-111. EXACT LOCATION TO BE DETERMINED IN THE FIELD BY THE ENGINEER.

LEGEND:

- ORIGINAL OR EXCAVATED ROCK SURFACE
- ORIGINAL OR EXCAVATED SOIL SURFACE
- ROCK OR SOIL EXCAVATION AND SLOPE H:V
- FILL (ALL MATERIALS) AND SLOPE H:V
- RIPRAP
- BEDDING
- CONCRETE
- BACKFILL

REFERENCE DRAWINGS:

WORK THIS DRAWING WITH	5275-C-104 AND C-105
GENERAL PROJECT PLAN	5275-C-102
PROJECT SITE TOPOGRAPHY	5275-C-106
POWERHOUSE GENERAL ARRANGEMENT	5275-C-121

DSGN.	-	REVIEWED	
CHKD.	-	CIVIL	
DWN.	-	MECH.	
CHKD.	-	ELECT.	
SUBM.			
APPROVED			

REV. NO.	DWG. TRANSMITTAL LETTER NO.	DATE	NATURE OF REVISION	BY	CHKD.	APPD.

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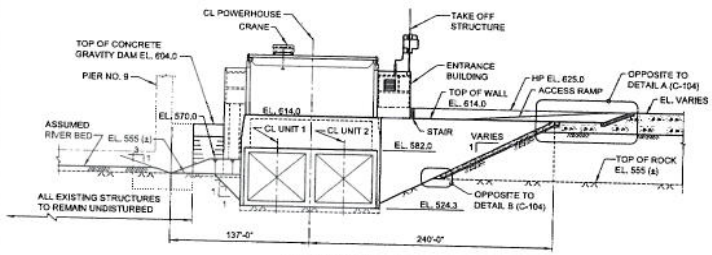
WILLOW ISLAND HYDROELECTRIC PROJECT
FERC LICENSE # 6902
AMERICAN MUNICIPAL POWER - OHIO, INC.
2600 AIRPORT DRIVE, COLUMBUS, OHIO 43219
PROJECT
GENERAL ARRANGEMENT

Willow Island Hydropower, LRH-2008-00293-OHR
Pleasants County, West Virginia
Detailed Plan View - Prop. Powerhouse, Approach and Exit Channels
Sheet 10 of 17

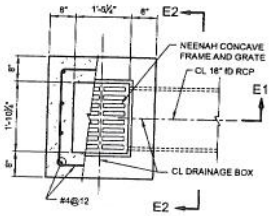
5275-C-105



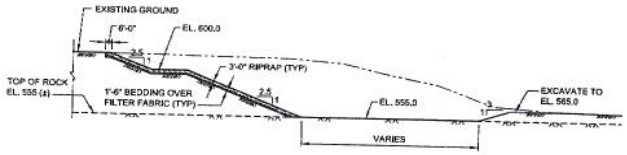
SECTION E - E
(C-103)
SCALE 0 50 100 FEET
1" = 50'

SECTION F - F
(C-103)
SCALE 0 50 100 FEET
1" = 50'

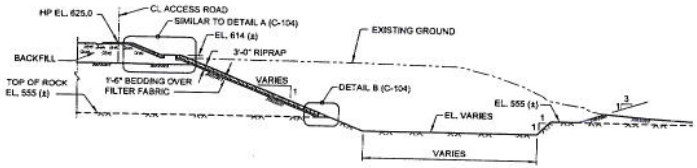
SECTION G - G
(C-103)
SCALE 0 50 100 FEET
1" = 50'



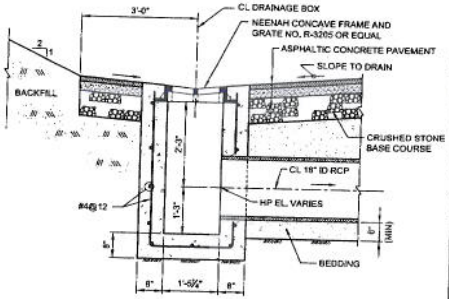
DETAIL E
(C-103)
SCALE 0 1 2 FEET
3/4" = 1'-0"



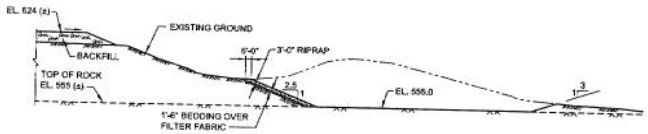
SECTION H - H
(C-103)
SCALE 0 50 100 FEET
1" = 50'



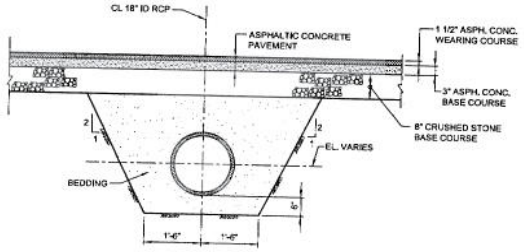
SECTION J - J
(C-103)
SCALE 0 50 100 FEET
1" = 50'



SECTION E1 - E1
SCALE 0 1 2 FEET
3/4" = 1'-0"



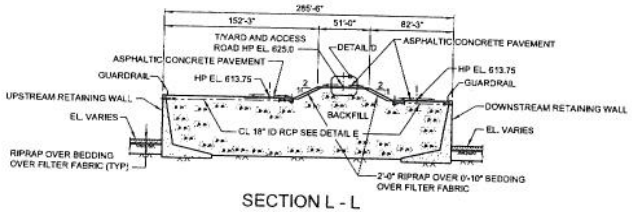
SECTION K - K
(C-103)
SCALE 0 50 100 FEET
1" = 50'



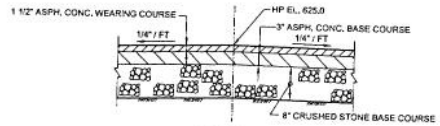
SECTION E2 - E2
SCALE 0 1 2 FEET
3/4" = 1'-0"

REFERENCE DRAWINGS:
WORK THIS DRAWING WITH 5275-C-103 AND C-104

NOTES:
1. CONCRETE FOR DETAIL E SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS.



SECTION L - L
(C-103)
SCALE 0 50 100 FEET
1" = 50'



DETAIL D
SCALE 0 1 2 FEET
1" = 1'-0"

DESIGN	-	REVIEWED
CHKD	-	CIVIL
DWN	-	MECH.
CHKD	-	ELECT.
SUPVR	-	
APPROVED		

REV. NO.	DRG. TRANSMITTAL LETTER NO.	DATE	NATURE OF REVISION	BY	CHKD.	APPD.

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WILLOW ISLAND HYDROELECTRIC PROJECT
FERC LICENSE # 6902
AMERICAN MUNICIPAL POWER - OHIO, INC.
2600 AIRPORT DRIVE, COLUMBUS, OHIO 43219
PROJECT
GENERAL ARRANGEMENT

Willow Island Hydropower, LRH-2008-00293-OHR
Pleasants County, West Virginia
Cross Section View - Prop. Powerhouse, Approach and Exit Channels
Sheet 11 of 17

(Use with Sheet 6 of 17

Willow Island Hydropower, LRH-2008-00293-OHR
Pleasants County, West Virginia
Plan & Section View – Fill within Spillway Bay 8 of the Dam
Sheet 12 of 17

PLAN

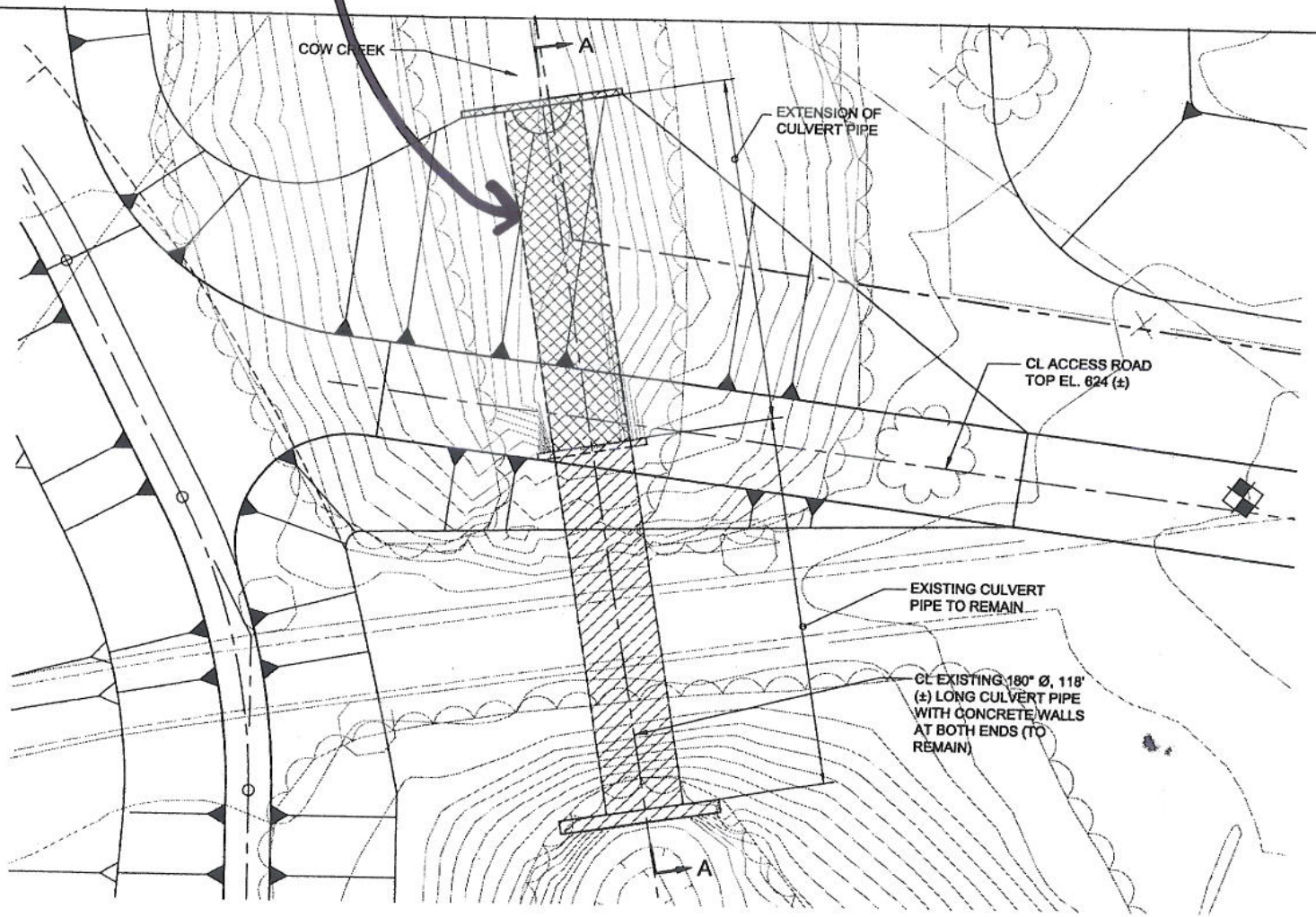
SCALE 0 100 FEET

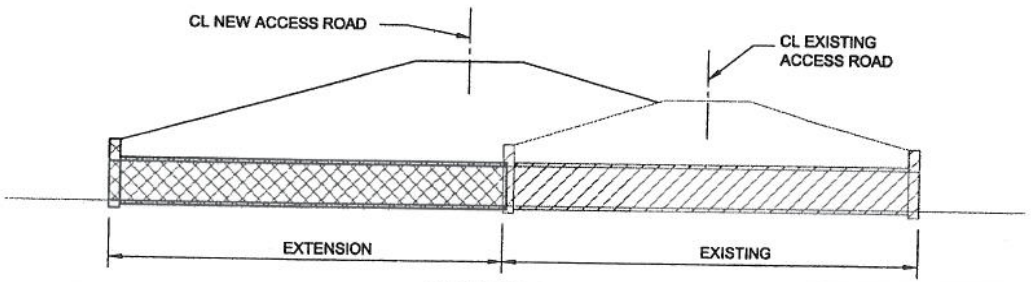
SECTION C - C

SCALE 0 50 FEET

- LOCATION AND LIMITS OF FILL WITHIN SPILLWAY BAY 8

wetland impact area

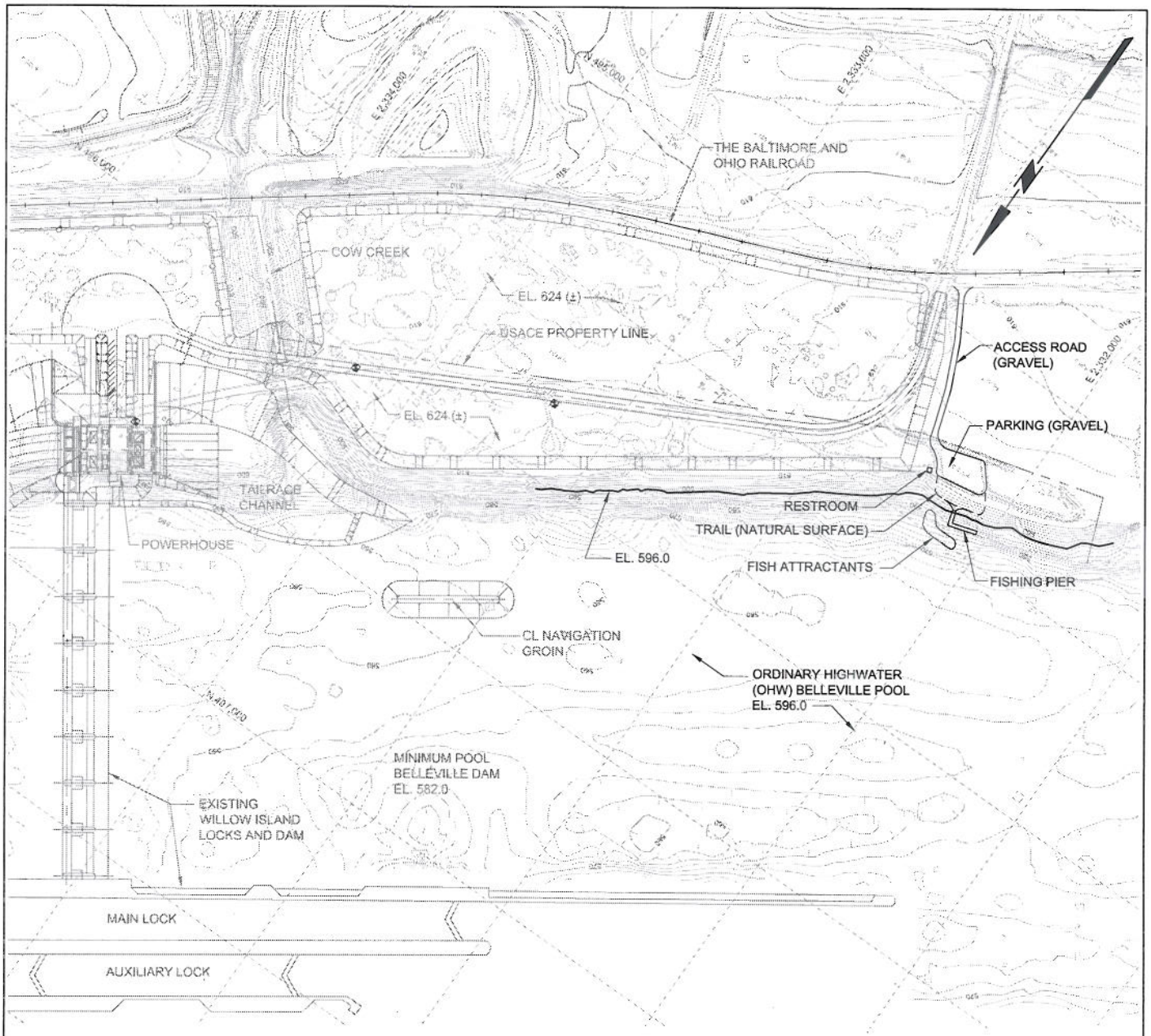




SECTION A - A

PLAN VIEW AND CROSS SECTION OF PROPOSED

Willow Island Hydropower, LRH-2008-00293-OHR
Pleasants County, West Virginia
Plan View – Culvert Extension (Wetland Impact Area)
Sheet 13 of 17

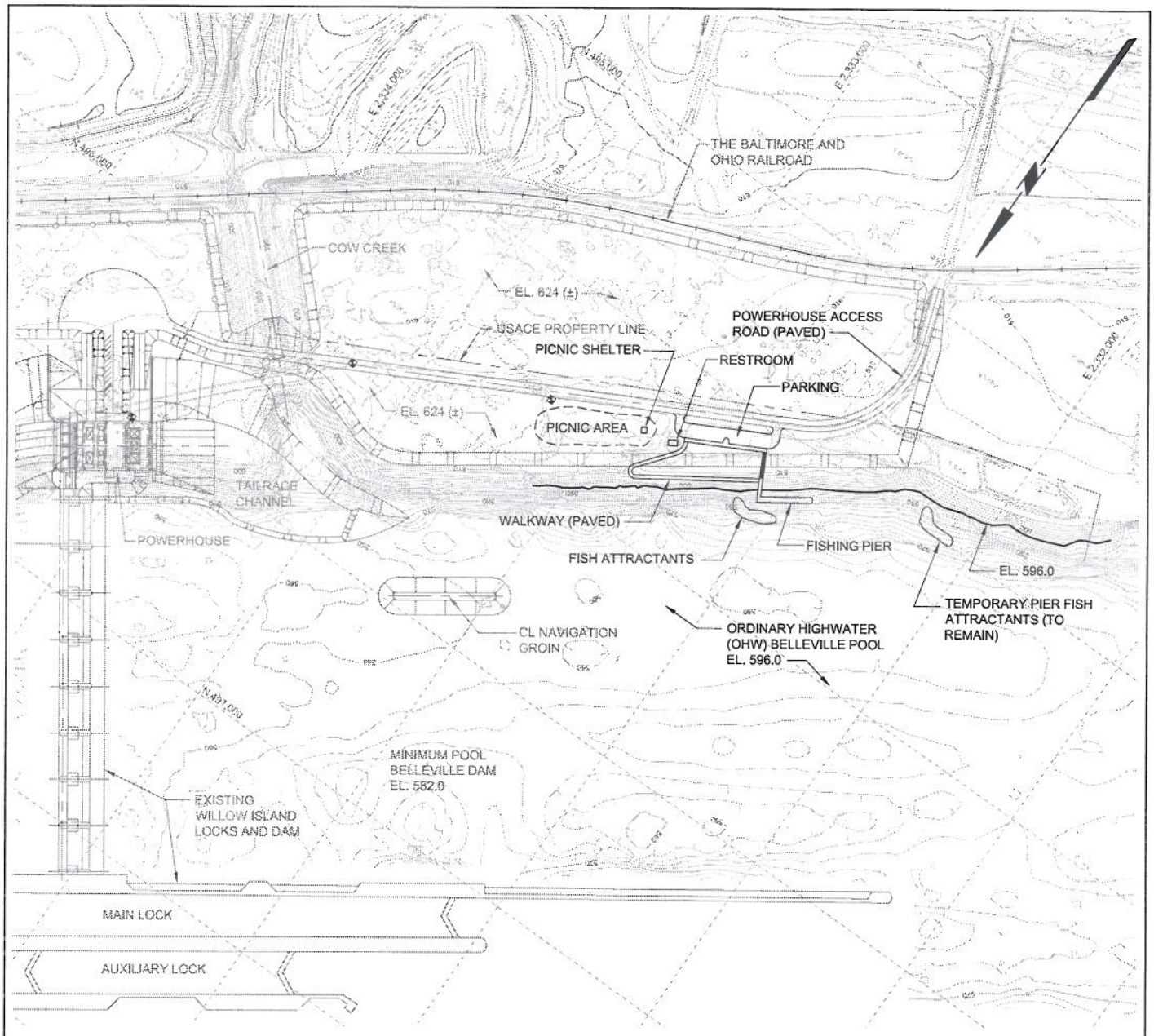


PROPOSED TEMPORARY RECREATION FACILITIES

SCALE 0 200 400 FEET
1" = 400'

AMERICAN MUNICIPAL POWER - OHIO WILLOW ISLAND HYDROELECTRIC PROJECT FERC LICENSE NO. 6902		
PROPOSED TEMPORARY RECREATION FACILITIES		
DATE: MAY 2008	SCALE: AS NOTED	EXHIBIT 12F

Willow Island Hydropower, LRH-2008-00293-OHR
Pleasants County, West Virginia
Plan View – Temporary Recreational Area
Sheet 14 of 17



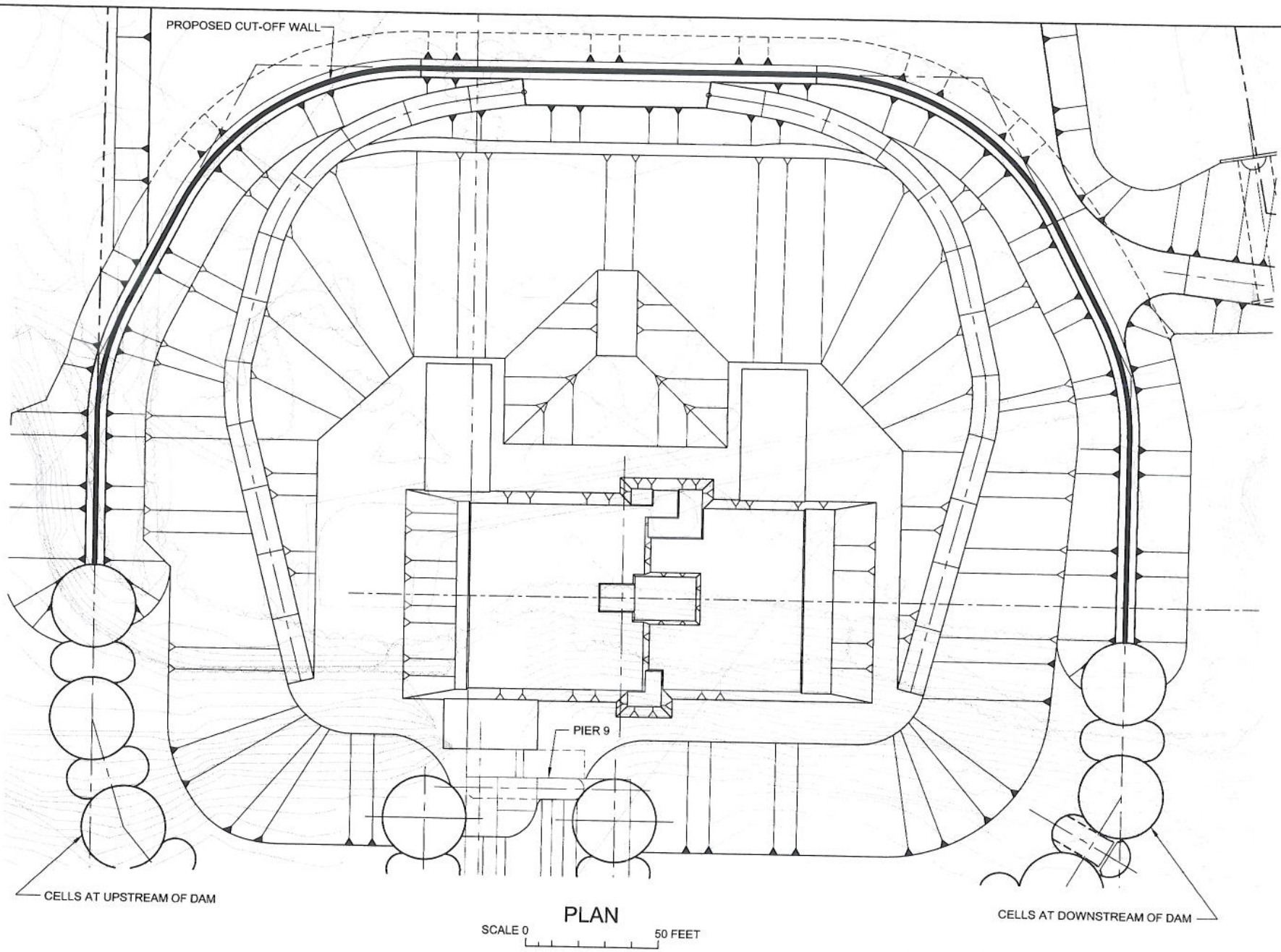
PROPOSED PERMANENT RECREATION FACILITIES

SCALE 0 200 400 FEET
1" = 400'

AMERICAN MUNICIPAL POWER - OHIO WILLOW ISLAND HYDROELECTRIC PROJECT FERC LICENSE NO. 6902		
PROPOSED PERMANENT RECREATION FACILITIES		
DATE: MAY 2008	SCALE: AS NOTED	EXHIBIT 12G

Willow Island Hydropower, LRH-2008-00293-OHR
Pleasants County, West Virginia
Plan View – Permanent Recreational Area
Sheet 15 of 17

Willow Island Hydropower, LRH-2008-00293-OHR
Pleasants County, West Virginia
Plan View – Transmission Line Route
Sheet 16 of 17
ATTACHMENT 2a - LOCATION OF PROPOSED TRANSMISSION LINE
N 493,000
N 494,000
N 495,000
N 496,000
N 497,000
N 498,000
E 2,334,000
E 2,335,000
E 2,336,000
E 2,337,000
CL ACCESS ROAD
NAVIGATION GROIN
POWERHOUSE
AUXILIARY LOCK
MAIN LOCK
EXISTING WILLOW ISLAND LOCKS AND DAM
FLOW (OHIO RIVER)
PROPOSED ACCESS ROAD & UTILITIES CORRIDOR (150' WIDE)
THE BALTIMORE AND OHIO RAILROAD
PROPOSED TRANSMISSION LINE CORRIDOR (100' WIDE)
SUBSTATION
SCALE 0
800 FEET



ATTACHMENT 2d - LOCATION AND LIMITS OF THE PROP(

Willow Island Hydropower, LRH-2008-00293-OHR
Pleasants County, West Virginia
Plan View – Proposed Cut-off Wall (Part of Cofferdam Construction)
Sheet 17 of 17